

The role of public private partnership in improving service delivery in South Africa

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Abstract:

South Africa is confronted with huge infrastructure service delivery backlogs, which has a negative impact on the country's economic growth and improvement of the lives of its citizens. The infrastructural backlog cannot be sufficiently addressed by government alone, as it requires a collaborative effort from both the public (government) and private (business) sectors. The study examined the contribution made by Private Public Partnerships (PPPs) in delivering infrastructure projects. The data used for the study were derived from both primary and secondary sources. The secondary sources were review of literature and primary data were obtained through the use of structured questionnaires which were distributed to construction stakeholders in the public and private sectors, who were involved in the PPP's projects in South Africa in the Gauteng province. A total of 90 questionnaire were distributed and 80 came back and used for the study. The study revealed that: PPPs speed up the infrastructural projects; completes the infrastructure projects much quicker than the traditional method; PPP increase the effectiveness of projects; completes work on time or even ahead of schedule; greater cost transparency; cost savings; reduction of life-cycle maintenance costs; reduction of the service delivery backlog, etc. The research has revealed that the projects delivered through PPP are of great quality and they are maintained well. Hence, PPPs should be practiced as often as the traditional method because it breach the gap of abandonment, unfinished and delays in projects.

Keywords: Infrastructure, Public-private partnerships, Service delivery, South Africa.

1 Introduction

Inadequate infrastructure is a constraint on growth worldwide, and particularly in developing countries (Ntshangase, 2002). Infrastructure services are often inadequate to meet demand, resulting in congestion and they are often of low quality or unreliable, while many areas are simply un-served (Manuel, 2007). This poor infrastructure performance reflects pervasive challenges facing governments (Bovis, 2010). Reviewed literature reveals that poor planning and coordination, weak analysis underpinning project selection, pursuit of political gain, and corruption, mean that the limited resources are often spent on the wrong projects (Mashwama *et al.*, 2017). The traditional method of delivering infrastructural projects is often poorly maintained, increasing costs and reducing benefits (Bovis, 2010 and Mashwama *et al.*, 2017).

Government of South Africa alone cannot meet the high demand of delivering proper infrastructure on time, hence, the collaboration between public and private sectors is required. The collaboration between government and the business sector is primarily informed by the fact that improved infrastructure benefits both sectors in the performance of their functions and responsibilities in society. Moreover, government had to invest in massive infrastructural roll-out in an effort to provide basic services such as water, health care, electricity, housing, road transport (Budget review, 2018).

Public Private Partnerships (PPPs) can mobilize additional sources of funding and financing for infrastructure and they can help improve project selection, subjecting assumptions to the market test of attracting private finance. Countries with relatively long PPP histories have found that PPPs manage construction projects better than traditional procurement (Bovis, 2012). Literature shows that PPPs can also help to ensure adequate maintenance and keeps assets in a serviceable condition (Machindi and Merrifield, 2001). However, some of the PPP projects that have been undertaken in South Africa have taken more time to be completed than anticipated and they have also used more money than in the actual tender prices, for example, the Gautrain project, and the stadiums that were built for 2010 world cup. Moreover the quality of these above mentioned projects are of good quality (Budget review, 2018).

2 South African infrastructure

South Africa is one of the countries that are experiencing the backlog in infrastructural service delivery and this has a negative impact to the economy and the residents of the country. Government has been doing their best to come up with solutions of how to reduce the service delivery backlogs whereby they have come up with suggestion of how they can achieve their goal of giving the community everything they need without struggling and they decided to take PPPs as one of the solution to this problem (Bovis, 2010; Manuel, 2007). However, PPPs is not the answer to infrastructural service backlog but it can only reduce the challenge faced by our government (Ntshangase, 2002). PPP's have been used in a number of countries as a means to deliver and manage public infrastructure (Mashwama *et al.*, 2017). Public infrastructure and services both play a huge role in society (Hodge *et al.*, 2005). The community of South Africa depended and rely on the developments funded by the public sector.

The US secretary for the Department of transport, Mr Ray LaHood remarked that “with the great number of priorities competing for public funds is the wake of the credit crisis, government are under more pressure than ever before to be creative about how infrastructure needs are met” (Deloitte, 2010). According to Manchidi *et al.* (2006), given the fiscal constraints in South Africa, Public-Private Partnerships are discussed as an alternative method of realizing infrastructure delivery and supplementing public sector resources (Manchidi *et al.*, 2006). One of the key political drivers behind the PPP is the desire to improve the nation's infrastructure and supporting public services without placing undue strain on scarce public funds and without having to increase taxation (Alfen *et al.*, 2009).

Other reasons for the adoption of PPP model by various governments include amongst others; skills transfer by the private sector to the public sector and achieving greater efficiency by limiting the usually lengthy government bureaucracy. Public sector is usually rich in human resources but lacks in expertise whereas private sector has more expertise but lacks in human resources (Asmat, 2010). The private sector can often react more quickly, as there is no bureaucratic hierarchy for decision making (Asmat, 2010).

3 Public Private Partnership (PPP) definition

It appears that there is no single definition that encompasses all aspect of PPP project and can be put forth as a standard definition (Mashwama, 2017; Bekka, 2012; Grimsey and Lewis, 2002; Hall, 2015). Following are different definition of PPP as per (Mashwama, *et al.*, 2017; Asmati; Hall, 2015; Bekka, 2012 and Nichols, 2014).

“A contractual arrangement between a public agency and a private sector company. Through this agreement, the skills and asset of each sector (public and private are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and awards potential in the delivery of the services and /or facility”

“A contractual agreement formed between public and private sector partners, which includes private sector financing, and allows for the more private sector participation than what is traditional. The agreements involve a government agency contracting with a private company to renovate, construct, operate, maintain or manage a facility or system. The sector retains ownership of the facility; however, the private party may be given additional decision rights in determining how the project or task will be completed”

“ an arrangement of roles and relationships in which two or more public and private entities coordinate in a complementary way to achieve their separate objectives through the joint pursuit of one or more common objectives”

“a long term contract between the public and private sectors where mutual benefits are sought and where ultimately the private sector provides operating services or puts private finance at risk”

For the purpose of the paper will adopt the definition of PPP as: a long term contract between government (national or local government) or government owned entity (Public agency) and a private sector (typically a consortium) in which:

The public agency leverages the private sector party skills and assets to perform all or significant aspect of a project (For example, financing, design, construct and /or O&M). The public agency and the private sector party share in some fashion or another the risks and rewards of the project. The public agency retains some measure of control over the project (either through ownership of the project or contractual provisions binding the private sector party).

4 PPPs structuring

It has been stated earlier that lack of uniformity in the definition of the concept of PPP is as a result of the different forms of PPP models. The PPP models vary from short-term simple management contracts to long-term very complex contracts (UNESCAP, 2007). According to this Report prepared for the High Level Expert Group Meeting of UNESCAP, the PPP models may vary mainly based on the following:

- Ownership of the capital assets
- Responsibility for investment
- Assumption of risks
- Duration of contract

Different factors contribute to the structuring of PPP projects which are as follows (Price water coopers, 2010):

- The type of service the contractor will perform under the PPP- design, construct, financing, operation and maintenance.
- Whether the PPP project involves construction of an entirely new project or a rebuild or modernization of an existing facility.
- The degree of control the public agency wants to exercise during the execution of PPP project
- If the contractor will own the constructed facility or asset during the term of the PPP contract.
- The terms and requirement of the PPP legislation in the jurisdiction where the project is located

5 Types and forms of PPPs

Following are the most common, legal and operational types of public-private partnerships in South Africa as per (Alfen *et al.*, 2009; Manchidi and Merrified, 2001; Manchidi *et al.*, 2006)

- a. Build-Operate-Transfer (BOT). The arrangement involves the transfer of responsibility for constructing, financing and operating a single facility to a private sector partner for a fixed period of time. At the end of that period, the responsibility reverts to the public entity.
- b. Design-Build-Finance-Operate (DBO). The service provider is usually responsible for financing the project during construction. The government purchases the asset from the developer for a pre-agreed price prior to commissioning and takes all ownership risks from that time.
- c. Build-Operate-Own (BOO). It involves the granting of ownership rights in perpetuity to develop, finance, design, build, own, operate and maintain an asset. The private sector own the asset outright and retains the ownership and operating revenue risk, with no transfer to the public sector.
- d. Design/Build (D/B) - This is the most basic type of PPP project. Here the private contractor designs and constructs the project for a fixed, not to exceed or guaranteed maximum price, to meet the performance specifications and requirement of the public owner. The public agency finances the project but avoids the additional cost of separate contracts for design and construction. The public owner owns the project and is solely responsible for O &M and can either perform such services with their own forces or contract out the O&M services to another contractor.
- e. Design, Build, maintain (DBM) - The contractor design and builds the project. However, the owner operates the constructed asset while the contractor perform routine maintenance and or repairs on the project for the duration of the PPP contract meeting the availability or project usability requirement of the contract.
- f. Design, Build, Operate, Maintain (DBOM) - The contractor is responsible for all four elements of the contract. The contractor is typically paid from the revenue gained through the operation of the constructed facility or project.
- g. Design, Build, Finance, Operate (DBFO) – The contractor performs the three basic functions of the project (design, build and operate). The contractor finances the whole project from their own coffers. The contractor is paid over the life of the project from the revenue generated by the constructed facility.
- h. Design, Build, Finance, operate, maintain (DBFOM) – The contractor designs, builds finances, operates and maintains the constructed facility and the contractor performs all four functions plus provide the financing for the project using private funds, while the constructed facility is owned by the public owner, the contractor

is paid over the life time of the project from the revenue generated from constructed asset.

- i. Design, Build, Finance, Operate, Maintain, Transfer (DSBFOMT) - The private contractor performs all function of the project, including financing the project and paid through the revenue generated. The contractor normally owns the facility for the term of the PPP duration. The contractor transfers the ownership, maintenance and responsibility of the project once the PPP contract ends.
- j. Build, Transfer, Operate (BTO) - The BTO is similar to the BOT, but the O&M of the project is performed by the owner at the end of the project. The private contractor and public company enter into an agreement whereby the contractor operates the constructed project for certain period.
- k. Build, Own, Operate, Transfer (BOOT) – The contractor owns the project for the duration of the contract. Like the BOT the private contractor may or may-not provide some or all the financing for the project.
- l. Lease, Develop and Operate (LDO) – The private contractor leases the facility from the public owner and uses the generated funds to expand the facility under a contract with the owner. The contractor is paid by the owner for the owner's uses of the facility.
- m. Concession – The public owner sells the right to operate and maintain an existing asset to a private contractor. Typical, under concession model, the duration of the concession is for a very long duration. Typical example Chicago skyway project was leased to a private PPP contractor for 99 years; while the Indiana toll road concession was inked for a 75 year term. The contractor is normally paid from the revenue earned on the project from toll or user fees.

6 PPPs method of payment

The financing of PPPs is a very challenging aspect and modes of financial funding are not predetermined on the level of the project but rather on the level of the financial modes (Lattemann et al, 2009). Treasury Regulation 16 states that the financing of PPPs is not prescriptive into a structure, but it is assumed that it will vary from project to project and sector to sector that will be closely linked to the funding sources secured for that deal (Manuel, 2007). However, PPPs are usually involving the private sector raising both the debt and equity to finance the project. According to Ntshangase (2002) some PPP projects are financed by both the government and the private entity. A public-private partnership financing can take one of the following forms (Ntshangase, 2002):

6.1 Availability based payment

The private contractor starts receiving payment when the project is complete and made available for the public to use. The public owner bears the demand and collection risks in that the payment to PPP contractor do not change even if the project is not used as anticipated. PPP projects therefore, offer budgetary certainty. The public sector often pays a fixed sum to the PPP contractor without having to worry about the increasing cost or the cost of renewal and disruption.

6.2 Shadow toll based payments

Shadow toll based payments - This payment model is used mostly on transportation projects. This are the vehicle amount paid to the PPP contractor by the owner not the users of the project. This method is used when it is not feasible for the public owner to employ toll facilities. Under this system the more the road is used, the more payment the owner and the contractor share the demand risk in the sense that if demand goes up, the

owner owes more to the contractor and on the flip side, when the demand goes down, the contractor receives less from the owner.

6.3 User fee payment

The users of the facility pay the Private contractor for the use of the facility, for example tolls on a privatized toll road. The contractor bears the risk of demand and collection.

7 The role played by PPPs in Gauteng

The PPPs' offering has been used as a credible solution to bridge the infrastructure deficit of many states in both the developed and developing world (Mashwama *et al.*, 2017; Hall, 2015). PPPs can provide a number of specific benefits to the public sector. In particular, they can offer value for money solutions, where the PPP can attain lower costs, higher levels of service through innovation and reduced risk for the public sector (Bovis, 2012). According to UN-HABITAT, (2011) state that the most significant attributes of PPPs is the increased certainty of outcomes both in terms of on-time delivery of projects and within-budget.

Following are project executed in South Africa through PPP and with great success (Budget review, 2018).

Table1: Successful project executed through PPP
(Source: Budget Review: 2018)

Project name	Government institution	Type	Financing structure	Project value R million	Form of payment
SANRAL N4 East Toll Road	SANRAL	DFBOT	Debt: 80% Equity: 20%	3 200	User charges
SANRAL N3 Toll Road	SANRAL	DFBOT	Debt: 80% Equity: 20%	3 000	User charges
SANRAL N4 West Toll Road	SANRAL	DFBOT	Debt: 80% Equity: 20%	3 200	User charges
Northern Cape fleet	Northern Cape Department of Transport, Roads and Public works	DFO	Equity: 100%	181	Unitary payment
Chapman's Peak Drive Toll Road	Western Cape Department of Transport	DFBOT	Debt:40% Equity: 10% Govt: 46%	460	User charges and guarantee
Fleet management	Eastern CAPE Department of Transport	DFO	Debt: 100%	553	Unitary payment
National fleet management	Department of Transport	DFO	Equity:100 %	919	Service fee
Gautrain Rapid Rail Link	Gauteng Department of Public Transport , Roads and Works	DFBOT	Debt : 11% Equity: 2% Govt: 87%	31800	User charges and patronage guarantee
SANRAL Gauteng Freeway Improvement Plan Toll Road	SANRAL	DFBOT	Debt:100%	2000	User charges

Since 1998, PPP model was introduced to South Africa, a total value of all project carried out amount to R89.3 Billion. Despite the success of the PPP model in South Africa, the number of new project transaction has declined in the last past six years, decreasing from an amount of R10.7 billion in 2011/12 to R5Billion in 2017/18, mainly as a result of delays and cancelled projects and increase restrictive international regulatory requirement on banks are limiting their ability to provide debt funding. Therefore, more awareness about the benefits is required to increase the chance of it being used. Following are the benefits and role played by PPPs in projects.

7.1 Value for money

PPPs can provide a number of specific benefits to the public sector. In particular, they can offer value for money solutions, where the PPP can attain lower costs, higher levels of service through innovation and reduced risk for the public sector (Bovis, 2012). Moreover, by bundling design, construction, operation and maintenance into a single contract the public owner can eliminate the cost associated with procuring and managing a series of separate contractors for all the project phases. Furthermore, if the PPP contract know they will be responsible for the O&M for the period of the contract, during design they will reduce the cost of O&M. Hence, the integration of detailed design, construct and operation would reduce the cost of the lifecycle of the project.

7.2 Time and budget

According to 2011(UN-HABITAT, 2011) one of the most significant attributes of PPPs is the increased certainty of outcomes both in terms of on-time delivery of projects and within - budget. Shorter construction period is guaranteed since, PPP project utilizes private funding, hence, construction delays is eliminated and bundling the design and construction process into a single contract will help shorten the duration of the project.

7.3 Risk distribution/ better risk allocation

Public-private partnerships have certain characteristics, when compared with the traditional public-private contractual formats. These characteristics reveal a different ethos in public sector management. The pivotal characteristic is that the private sector partner is expected to play a strategic role in financing and delivering the infrastructure project or the public service by providing its input into the various phases such as the design, implementation, construction, completion, operation and maintenance stages of the project (Bovis 2010). PPPs distribute the risks between the public and private sectors depending on the strength of each entity to handle certain risks and on the expectation that the private sector will assume substantial risks in its long-term engagement in delivering infrastructure and public services. Risk assessment in PPPs is a totally different exercise than the assessment of risk in traditional public contracts mainly because risks are shared in PPPs and the public entity can be able to focus on other things other than the infrastructural service delivery.

7.4 Innovation

The involvement of private sector in the design and construction process result in a higher quality project

7.5 Adequate facility pricing

Efficient pricing has been identified as the key benefit to the PPP model as the private sector would be more likely to use efficient pricing concepts such as congestion pricing.

7.6 Best solution

PPP play a huge role in delivering project when there budget constraint, unwillingness to raise taxes and the inability to sell government bond. Furthermore, the Private Company can use private financing to construct the project.

7.7 Avoids increasing government debt

Private financing of the project allows the public owner to receive a complete project at the end of the contract without increasing public debt and they hardly impair the public owner's bonds ratings

7.8 Budget relief

This will depend on the strategy being used, private funding for projects do not impact the public owners budget. Moreover, PPP projects are privately financed and they provide budget certainty or security. Furthermore, this reduces capital spending for the public or government as payment are often deferred until the project is complete and goes into operation.

7.9 Better performing assets

PPP projects would guarantee a completed working structure or facility to generate good revenue, so that the contractor can generate revenue to pay the debt owed to them.

7.10 Avoids underbidding

In the conventional strategy of design bid build process the contractor will bid low to win the project and then pursue numerous changes and claims. While under the PPP strategy this is eliminated totally.

7.11 Technical expertise

The private entity gives public entity access to the technical experience and evidence of the private sector throughout the entire project. Moreover, more innovation is highly possible on PPP project since they are based on output specifications which maximizes the use of private sector skills when the public sector lacks in house expertise.

7.12 Minimising waste

Government contract are mostly awarded to political cronies and there is a lot of corruption involved, Compared to PPP projects which is more transparent. Public agencies perform more due diligence and analysis concerning the structure of the PPP project. Furthermore, there is a lot of negotiation and convincing happening between public agencies and political masters and the public at large to buy into the PPP process, then the potential for wasting public funds is substantially reduced.

7.13 Revenue generated

This process works well on the strategy of PPP concessions involving the public entity to sell their rights to operate and maintain an existing assets to a private entity for a very long time. The sale of the concession can generate a huge amount of revenue for the public owner. For example, “ In the Chicago Skyway project, the City used US\$490 Million of the US\$1.8 billion concession fee to redeem outstanding municipal debt and fund other projects” (US Department of Transport:2012).

8 Research Methodology

8.1 Research approach and design

This study adopted a quantitative approach as the purpose was to investigate role of PPP in improving service delivery in Gauteng South Africa. Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity (Mashwama et al., 2017). A well-structured questionnaire was distributed to different construction companies in Gauteng Province, amongst construction professionals such as civil engineers, project managers, directors, quantity surveyors, construction managers and contractors who are involved in the PPP projects. The questionnaires were sent via e-mails, some were delivered. 90 Questionnaires were distributed and 80 came completed and eligible to use and reflects 89 % response rate. It was difficult to gather questionnaires as the professionals are always busy, some of them returned questionnaire after scheduled time, and others apologized for not sending the completed questionnaire back. The study was conducted from reliable scholarly sources such as articles, journals, books, publications, websites and site experience on the field.

The study was limited to Gauteng Province and the target population were the professionals who have been involved with PPP project in Gauteng. The reason why we only involving professionals who were and are actively involved in the PPP project so we can get direct views on the role played by the PPP in improving service delivery. Random sampling was adopted and used for study.

8.2 5- Point linkert scale

5- point linkert scale was adopted for the study which gave a wider range of possible scores and increase statistical analyses that are available to the researcher (Mashwama, et al., 2017). The first Linkert scale read is on agreement form as follows:

- 1- Strongly Disagree (SD)
- 2- Disagree (D)
- 3- Neutral (N)
- 4- Agree (A)
- 5- Strongly Agree (SA)

The second linkert scale read is on likelihood as follows:

- 1- Extremely Unlikely (EU)
- 2- Unlikely (U)
- 3- Neutral (N)
- 4- Likely (L)
- 5- Extremely Likely (EL)

The 5 point scales were transformed to mean item score abbreviated as (MIS) for each of the roles played by PPP in improving service delivery in South Africa

8.3 Computation of the mean item score (mis)

The computation of the mean item score (MIS) was calculated from the total of all weighted responses and then relating it to the total responses on a particular aspect. The formula is used to rank the challenges facing roads construction projects based on frequency of occurrences as identified by participants (Mashwama, et al.2017)

$$\text{MIS} = \frac{1n1 + 2n2 + 3n3 + 4n4 + 5n5}{\sum N}$$

Where;

- n1 = number of respondents for strongly disagree
- n2 = number of respondents for disagree
- n3 = number of respondents for neutral
- n4 = number of respondents for agree
- n5 = number of respondents for strongly agree

N = Total number of respondents

9 Findings and Discussion

Table 2 reveals that PPP contribute in completion of structure much quicker and was ranked the highest with (MIS=4.10; STD=1.093); PPP,s increase the effectiveness of project in Gauteng was ranked second with (MIS=3.80; STD=1.050); PPP's completes work on time or even before schedule was ranked number third with (MIS =3.72; STD=1.05) followed by PPP being cost transparency and was ranked fourth with the (MIS= 3.70, STD=0.91); Cost saving was ranked fifth with the (MIS = 3.64; 0.851); Reduction of life cycle maintance costs was ranked sixth with (MIS=3.52; STD=1.035); Risk associated costs was ranked seventh with (MIS=3.44;STD=1.072); Reduction of service delivery backlog was ranked eight with (MIS=3.44; STD=0.972); Improved efficiency and risk transfer was ranked ninth with (MIS=3.34; STD=1.272);Better quality services was ranked tenth with (MIS=3.32; STD=1.207); Improved levels of services delivery was ranked eleventh with (MIS:3.28;STD:1.246); Value for money was ranked twelve with (MIS=3.26; STD=1.291); ability of government to focus on leadership issues was ranked thirteen with (MIS=3.24; STD=1.061); Greater certainty was ranked fourteen with (MIS=3.14; STD=1.287) and Better regulation was ranked last with (MIS=3.02; STD=1.152).

Table 1. Role played by PPP in improving service delivery

PPP Role	MIS	STD. DEV	RANK
Completes infrastructure much quicker	4.10	1.093	1
PPP's increase the effectiveness of projects in Gauteng	3.80	1.050	2
PPPs completes work on time or even before schedule	3.72	1.051	3
PPP Cost transparency	3.70	0.909	4
Costs saving	3.64	0.851	5
Reduction of life-cycle maintenance costs	3.52	1.035	6
Risk associated costs	3.44	1.072	7
Reduction of the service delivery backlog	3.44	0.972	8
Improved efficiency and risk transfer	3.34	1.272	9
Better quality services	3.32	1.203	10
Improved levels of service delivery	3.28	1.246	11
Value for money	3.26	1.291	12
Ability of government to focus on leadership issues	3.24	1.061	13
Greater certainty	3.14	1.287	14
Better regulation	3.02	1.152	15

10 Conclusion and Further Research

Public-private partnerships model in South Africa and other parts of the world has improved service delivery and reducing infrastructure backlog. PPP contribute in infrastructure completion on time and within budget. Moreover, PPPs ensures transparency, manage risk and secure returns for private investors. The research has

revealed that the projects delivered through PPP are of great quality and they are maintained well. Hence, PPPs should be practiced as often as the traditional method because it breach the gap of abandonment, unfinished and delays in projects. However, despite the success of PPP in delivering infrastructure, it is declining instead of increasing and creating more opportunities for private investors. The decline is mainly as a result of delays and cancelled projects and increase restrictive international regulatory requirement on banks is limiting their ability to provide debt funding. Furthermore, the government need to increase more credible PPP project so as to attract private investors, private sectors to venture into them and plan their long term investment with appropriate return of investment. Moreover the Government need to increase more awareness about the beauty and benefits of PPPs and also conduct training more often for the public and thus bridging the gap of skills and capacity.

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